



LOCAL COASTAL PLAN UPDATE

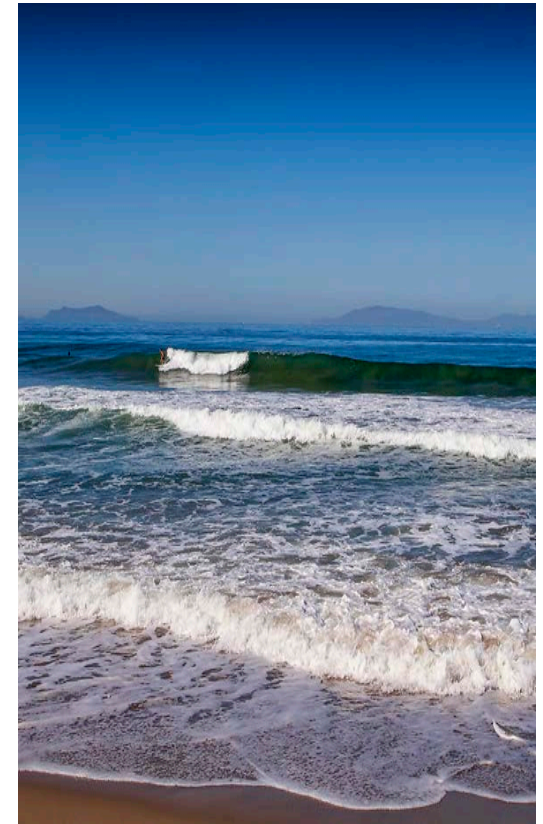
August 9, 2017

VULNERABILITY ASSESSMENT REPORT RESULTS
PRELIMINARY ADAPTATION STRATEGIES

Agenda

Welcome and Introductions

- I. Local Coastal Program (LCP) Overview
- II. Completed Tasks: Sea Level Rise (SLR)
- III. Vulnerability Assessment
- IV. Possible Adaptation Strategies
- V. Discussion
- VI. Next Steps and Schedule



Introductions: City and Consultant Team

▶ **Development Services**

- *Planning Division*

▶ **Rincon Consultants**

- *Project management*
- *Technical Analysis*
- *Environmental Analysis*

▶ **RRM Design Group**

- *Community Engagement*
- *LCP Policy Development*

▶ **Revell Coastal**

- *Coastal Hazards Modeling*
- *Adaptation Analysis*

▶ **Everest International**

- *Drainage Analysis*
- *Adaptation Analysis*
- *Tsunami modeling*

▶ **Dr. Phil King**

- *Economic Analysis*

I. Oxnard's Local Coastal Program (LCP)

- ▶ 1972, voters approve Proposition 20 “Coastal Zone Conservation Act”
- ▶ 1976, Legislature adopts Coastal Act, funding to develop LCPs.
- ▶ 1982, Oxnard adopts Coastal Land Use Plan (land uses and 95 policies).
- ▶ 1986, Oxnard adopts Chapter 17, Coastal Zoning Ordinance.
- ▶ Various amendments over 30 years.
- ▶ Four Planning Areas:

1. ***McGrath/Mandalay Beach***
2. ***Oxnard Shores***
3. ***Channel Islands Harbor***
4. ***Ormond Beach***

Oxnard, California Code of Ordinances

CHAPTER 17: COASTAL ZONING

ARTICLE I. GENERAL PROVISIONS

17.1. Title

17.2. Purpose

17.3. Definitions

17.4. Establishment of coastal sub-zone districts

17.5. General requirements

ARTICLE II. COASTAL SUBZONES

17.10. B-R-1, Single-Family Beach, Sub-Zone

17.11. B-R-1, Single-Family Wave-Oriented, Sub-Zone

17.12. B-R-2, Townhouse Wave-Oriented, Sub-Zone

17.13. B-S-C, Coastal Multiple-Family, Sub-Zone

17.14. B-S-C, Coastal Medium Density Multiple-Family, Sub-Zone

17.15. CFC, Coastal Planned Community, Sub-Zone

17.16. MHP-C, Coastal Mobile Home Park, Sub-Zone

17.17. CNC, Coastal Neighborhood Commercial, Sub-Zone

17.18. CV-C, Coastal Village Serving Commercial, Sub-Zone

17.19. CID, Coastal Dependence Industrial, Sub-Zone

17.20. EC, Coastal Energy Facilities, Sub-Zone

17.21. COO, Coastal Oil Development, Sub-Zone

17.22. RC, Coastal Recreation, Sub-Zone

17.23. RP, Coastal Resource Protection, Sub-Zone

17.24. HCL Harbor Channel Islands, Sub-Zone

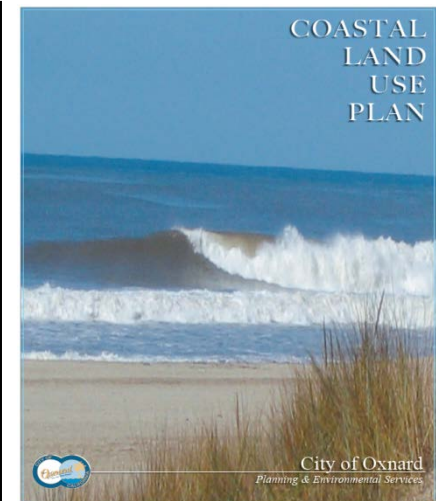
17.25. R-2E, Beachfront Residential, Sub-Zone

ARTICLE III. SPECIFIC COASTAL DEVELOPMENT AND RESOURCE STANDARDS

17.30. Purpose

17.31. Habitat areas

17.32. Diking, dune/dune, filling, and shore-line structures



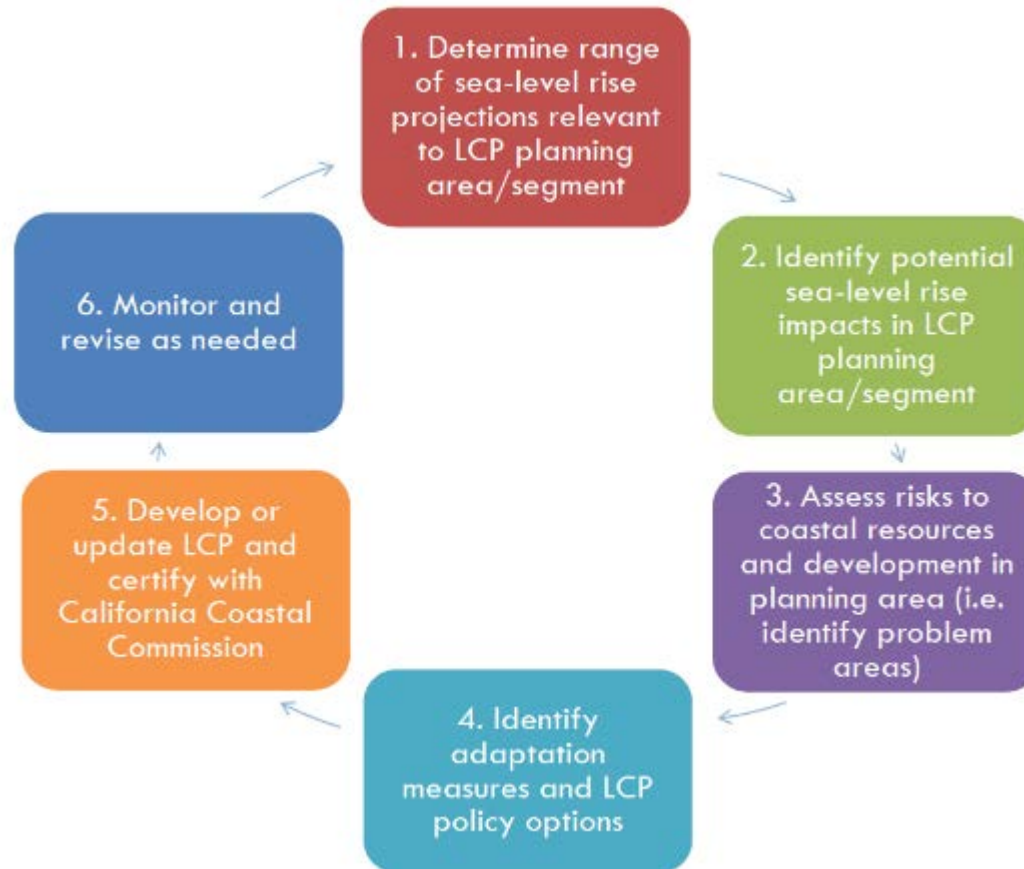
Relevant projects

- ▶ City of Oxnard Puente Power Plant opposition
- ▶ County of Ventura (including City of Oxnard) FEMA Flood Insurance Rate Map update (final workshop soon)
- ▶ County of Ventura Vulnerability Assessment (underway)
- ▶ USGS COSMOS 3.0 final results workshop (July 2017)
- ▶ Ormond Beach Restoration and Access Plan
- ▶ Naval Base Coastal Resilience

Need for LCP Update:

1. Most all developments completed or approved (Seabridge, Westport, Harbour Island, Northshore, etc.).
2. Several LCP policies outdated (LNG terminal, Ormond Beach industrial uses, etc.).
3. Consistency with goals and policies in the 2030 General Plan.
4. Ormond Beach Wetland Restoration planning initiated, land purchased, Halaco closed, Once-through Cooling (OTC) phasing out.
5. McGrath State Beach closure, relocation planning.
6. Coastal Commission SLR Policy Guidance adopted August 2015, encouraging LCP Updates.

Coastal Commission Sea Level Rise Guidance



LCP consistent with Coastal Act

- ▶ Achieve consistency with the Coastal Act.
 - *Use best available SLR science.*
 - *Minimize coastal hazards through planning, policies, development standards, and regulations.*
 - *Maximize public access, recreation, and environmentally sensitive habitat areas (ESHA).*
 - *Protect existing development where feasible.*
 - *Maximize agency coordination and public participation.*
 - *Anticipate and adapt to SLR.*

LCP Update: Nine Tasks and Schedule

Awarded two grants totaling \$150,000

June, 2015

1. Set up Public, Agency, and Technical outreach
2. Finalize the Coastal Hazards with SLR Map Atlas
3. Vulnerability Assessments and Economic Impacts
4. Review LCP Policies and Programs
5. Update the LCP Document
6. Submit to the Coastal Commission
7. Parallel Environmental Review
8. City Hearings and Adoption
9. Coastal Commission Certification

Continuous



Fall 2017

Winter 2018

Spring 2018

Fall 2018

Fall 2018

Winter 2019

Completed Tasks

- ▶ Reviewed current LCP and 2030 General Plan for consistency.
- ▶ Mapped Environmentally Sensitive Habitat Areas (ESHA).
- ▶ Mapped Coastal Hazards with SLR incorporated.
- ▶ Completed Tsunami and Drainage Vulnerability.
- ▶ Draft Vulnerability Assessment and Fiscal Impact Report.
- ▶ Coordination with Coastal Commission, Agencies, Technical Stakeholders, etc.
- ▶ Public Outreach:
 - ▶ General public and interest groups
 - ▶ Technical Advisory Committee

II. Coastal Hazards

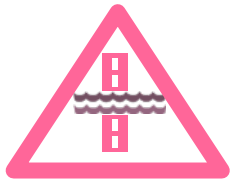


Definition of Hazards



Erosion

when the land is worn away by water, wind, or ice



Coastal Storm Flood

when flooding occurs in eroded areas



Coastal Storm Wave

when water levels rise & waves reach further inland



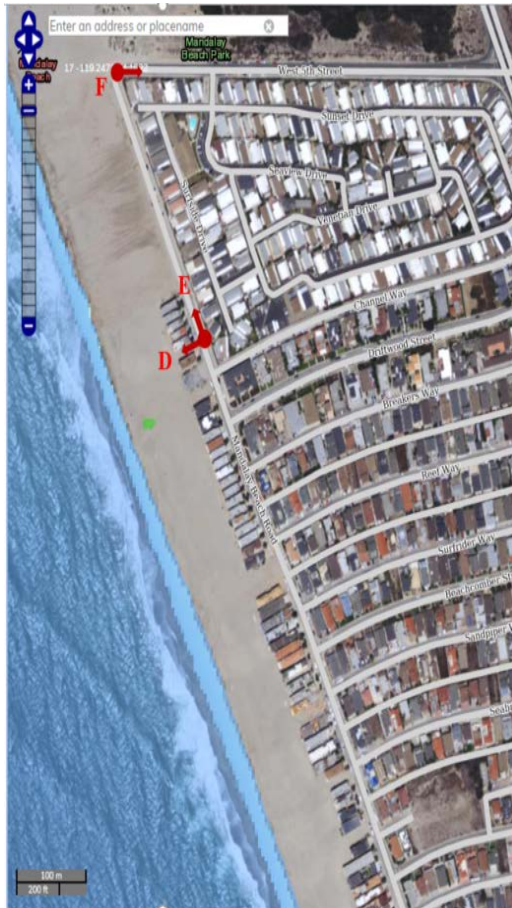
Tidal inundation

when the tide rises & water covers land normally dry



Oxnard Shores - 100 year event NO SLR

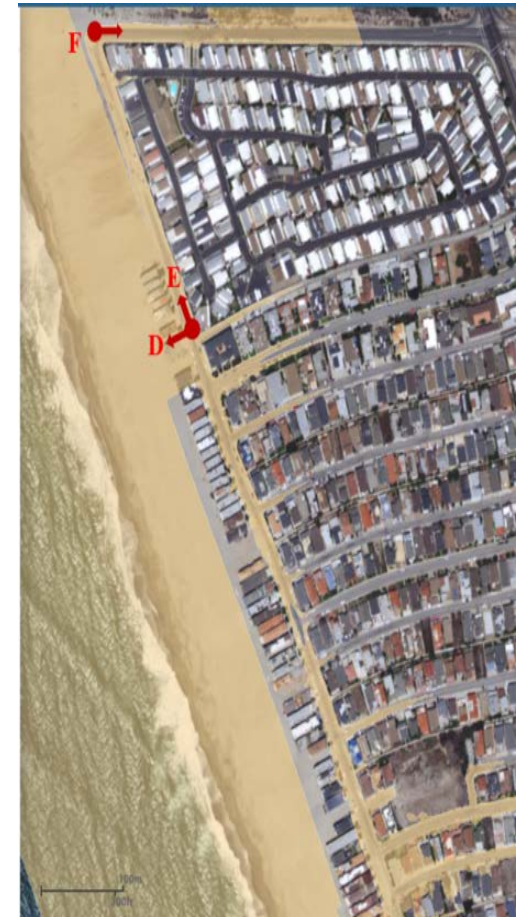
COSMOS 3.0



FEMA PFIRM



Coastal Resilience



Oxnard Shores – December 11, 2015

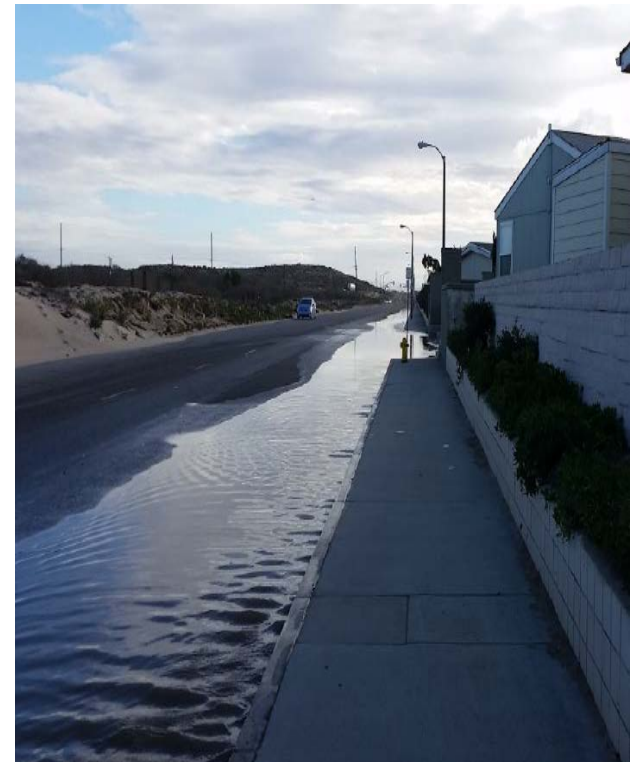
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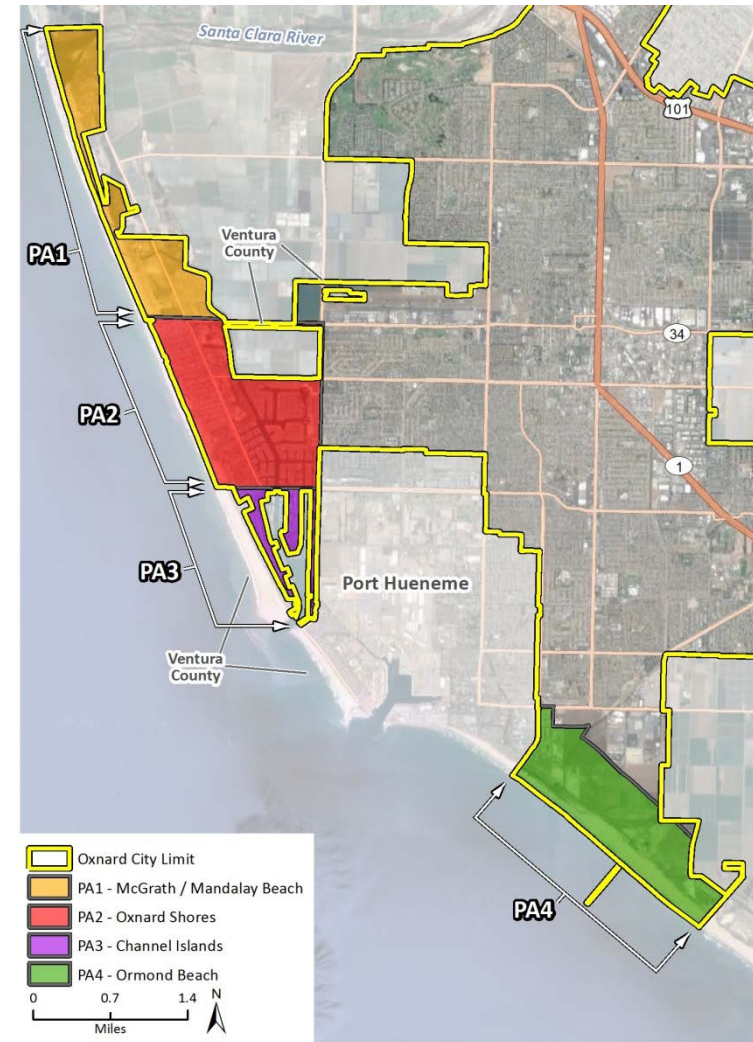


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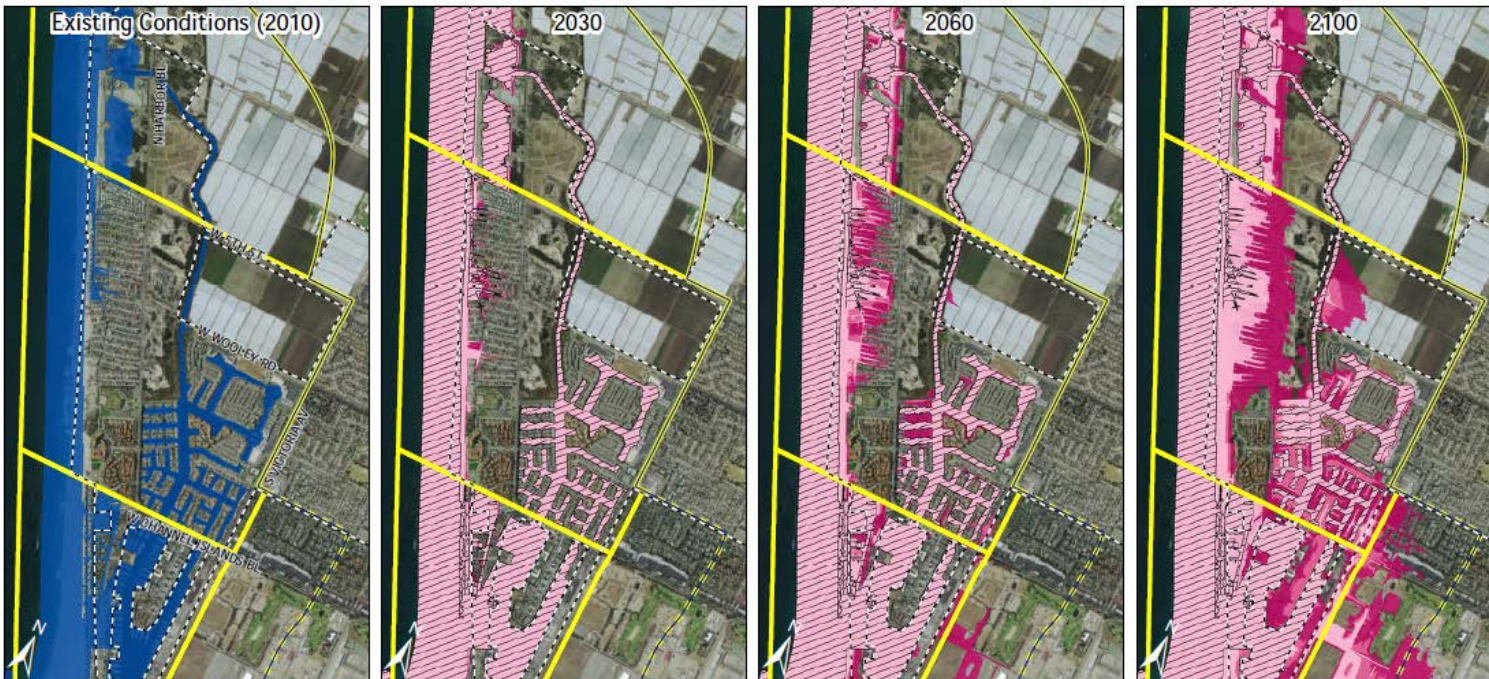


Coastal Hazards increase with SLR

- ▶ Used TNC Coastal Resilience Modeling.
- ▶ <http://Maps.coastalresilience.org>
- ▶ Four Coastal Hazards modeled plus combination of all Coastal Hazards:
 - *Combined Hazards*
 - *Relative Risk*
- ▶ By Four Planning Areas and Port Hueneme.
- ▶ SLR Projections: 2030, 2060, and 2100.
- ▶ Did not consider any adaptation strategies.

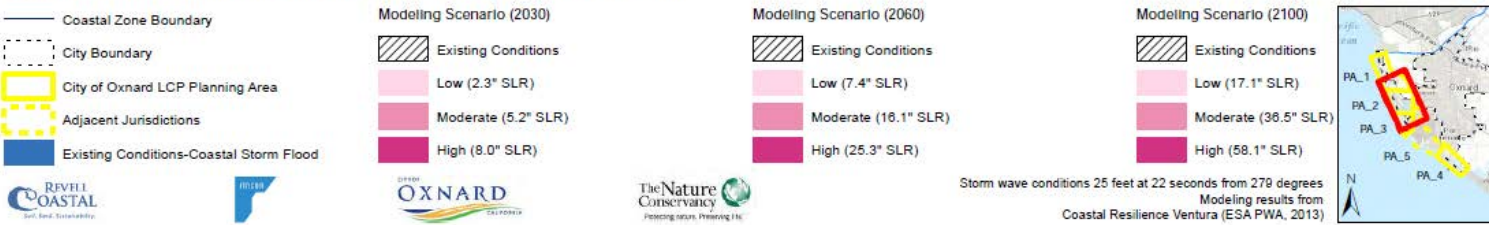


Coastal Hazard Maps with SLR



High SLR* (inches)
8.0
25.3
58.1

Figure 4.2.4 - Coastal Storm Flood Hazard Zones for Planning Area 2: Oxnard Shores



Sea Level Rise Atlas

<http://nebula.wsimg.com/47a35bdd5437515d814a57fda349c92f?AccessKeyId=1F69D8F922B3B7C85C6C&disposition=0&alloworigin=1>

III. Vulnerability Assessment

- ▶ Evaluated impacts of coastal hazards.
- ▶ Included both public and private property.
- ▶ Market value of land and replacement cost value of structures were used (2017 dollars).
 - ▶ Ventura County Property Tax data for each parcel.
 - ▶ Replacement costs estimated per square foot using FEMA's Hazard Guidance.
 - ▶ Depth of flooding based on FEMA guidelines with SLR added.
- ▶ In process of being finalized with Coastal Commission.
- ▶ Report will be posted on website in Fall of 2017.
- ▶ All figures and data presented are from this report.



8 Sectors Evaluated



Residential Land



Commercial Land



Oxnard Municipal Buildings



Power Plants



Channel Islands Harbor



Hazardous Waste



Coastal Access



Infrastructure



Residential Land

By 2030

- ▶ Oxnard Shores already vulnerable to coastal erosion and tidal flooding.
- ▶ Erosion projected to cause more damages.
- ▶ Total damage over \$300 million

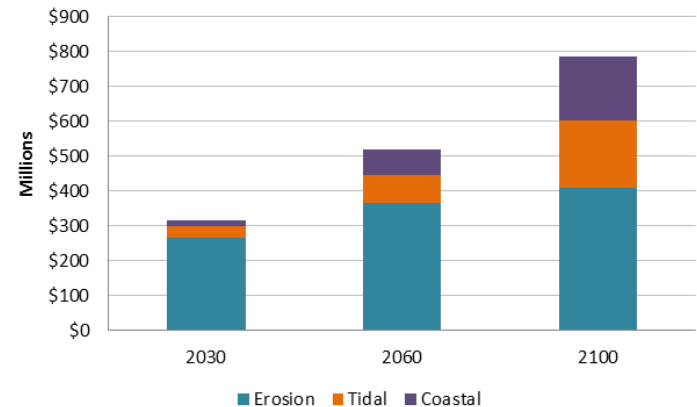
By 2060

- ▶ Increase in damages by all coastal hazards between 2030 and 2060 of over \$200 million.
- ▶ Coastal erosion continues to cause greatest damages due to loss of land.

By 2100

- ▶ Increase in damages by all coastal hazards between 2030 and 2100 of over \$250 million.
- ▶ Total cost of demolition or removal is estimated to be over \$71 million by 2100.

Figure VII-16. Economic Value of Vulnerable Residential Parcels



	2030	2060	2100
Erosion	\$263,950,000	\$365,900,000	\$406,990,000
Tidal	\$36,050,000	\$79,940,000	\$195,420,000
Coastal	\$14,020,000	\$73,530,000	\$181,180,000
Total	\$314,020,000	\$519,370,000	\$783,590,000



Infrastructure

By 2030

- ▶ Impacts mainly due to erosion.
- ▶ Road removal/replacement - \$4 million.
- ▶ Water/Sewer removal/replacement – \$4.6 million.

By 2060

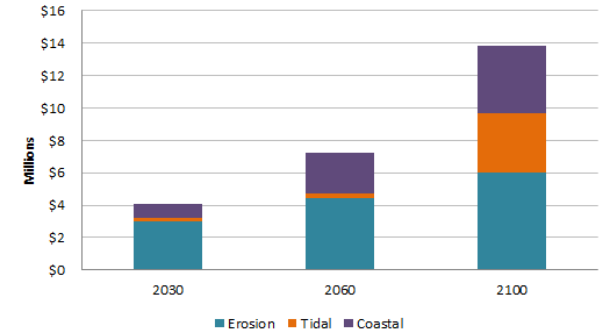
- ▶ Impacts almost double.
 - ▶ Road removal/replacement - \$6.4 million.
 - ▶ Water/Sewer removal/replacement – \$7.2 million.

- ▶ Coastal storm flooding causes more damages.
- ▶ Total cost of demolition or removal estimated at \$14 million.

By 2100

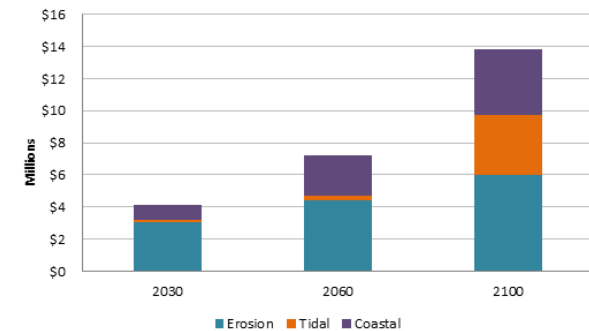
- ▶ Equally susceptible to all coastal hazards.
 - ▶ Road removal/replacement - \$10.6 million.
 - ▶ Water/Sewer removal/replacement – \$13.8 million.
- ▶ Total cost of demolition or removal estimated at \$24 million.

Figure VII-10. Economic Value of Road Removal/Replacement



	2030	2060	2100
Erosion	\$2,840,000	\$3,950,000	\$5,180,000
Tidal	\$180,000	\$300,000	\$2,620,000
Coastal	\$970,000	\$2,180,000	\$2,840,000
Total	\$4,000,000	\$6,420,000	\$10,640,000

Figure VII-11. Economic Value of Water/Sewage Infrastructure at Risk



	2030	2060	2100
Erosion	\$3,020,000	\$4,430,000	\$6,030,000
Tidal	\$180,000	\$280,000	\$3,670,000
Coastal	\$900,000	\$2,510,000	\$4,130,000
Total	\$4,100,000	\$7,220,000	\$13,830,000



Channel Islands Harbor

Channel Islands Harbor generates \$120.9 million in economic output and 825 jobs generates over \$57 million in local labor income.

Impact Type	Employment	Labor Income	Output
Direct Effect	451.7	\$38,570,000	\$69,620,000
Indirect Effect	131	\$7,540,000	\$17,270,000
Induced Effect	242.4	\$11,060,000	\$34,090,000
Total Effect	825.1	\$57,170,000	\$120,970,000

By 2030

- ▶ Susceptible to increasing tidal inundation hazards.

By 2060

- ▶ Tidal inundation hazards increase significantly after 2060 into waterway communities north of Channel Islands Harbor.

By 2100

- ▶ Entire Planning Area is susceptible to coastal storm flooding.



Power Plants

- ▶ Three coastal power plants:
 - ▶ NRG Mandalay Beach Generating Station OTC
 - ▶ Southern California Edison (SCE) McGrath Peaker Plant
 - ▶ NRG Ormond Beach Generating Station OTC
- ▶ 2030 General Plan policies to remove all three.
- ▶ State requires OTC to comply with water quality standards or cease operations by end of 2020.
- ▶ SCE Peaker Plant has 25 year permit.
- ▶ NRG application with Energy Commission for Puente Power Plant is ongoing.

By 2030

- ▶ NRG Mandalay Beach Generating Station and SCE McGrath vulnerable to coastal storm flooding.
- ▶ Ormond Beach Generating Station vulnerable to erosion and coastal storm flooding.

By 2060

- ▶ Ormond Beach Generating Station susceptible to all coastal hazards.

By 2100

- ▶ Entirety of all three sites vulnerable



Coastal Access

- ▶ Coastal Act requires coastal access.
- ▶ Evaluated: Access points
Beaches/Dunes
Parking
Hotels

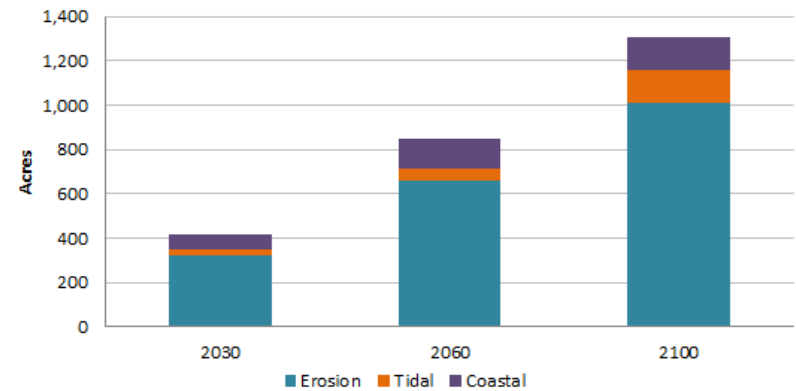
By 2030

- ▶ Over 80% of access points and coastal dunes/beaches are vulnerable; including McGrath State Beach and Oxnard Shores.
- ▶ Erosion biggest threat
- ▶ Annual value of McGrath and Oxnard Shores ~ 4 million

By 2060 and 2100

- ▶ Impacts steadily increase. Erosion biggest threat

Figure VII-5. Beach Area Losses due to Erosion, Tidal, and Coastal Flooding by Planning Horizon



	2030	2060	2100
Erosion	324	658	1,007
Tidal	26	58	153
Coastal	65	130	144
Total	415	846	1,304

Table 5. Yearly Economic Value of McGrath and Oxnard Shores Beaches

Reach	Day Use Value	Recreation Value	Local Spending
Oxnard Shores	\$40.03	\$2,201,500	\$1,646,002
McGrath	\$40.03	\$2,202,300	\$1,686,600



Commercial Land

Does not include Channel Islands Harbor

By 2030

- ▶ Minimal impact

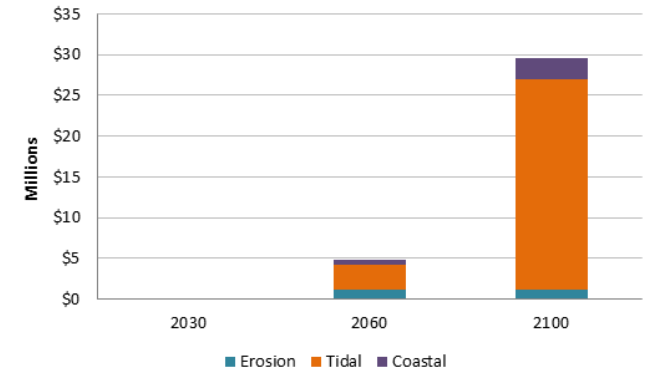
By 2060

- ▶ Tidal flooding considerable threat.
- ▶ Most vulnerability pertains to the Shopping Center at the Seabridge Marina on S. Victoria Avenue.

By 2100

- ▶ Tidal threat increases
- ▶ Approximately half of the manufacturing properties will be impacted.

Figure VII-19. Economic Value of Vulnerable Commercial/Industrial Parcels



	2030	2060	2100
Erosion	\$0	\$1,120,000	\$1,120,000
Tidal	\$0	\$3,130,000	\$25,860,000
Coastal	\$90,000	\$640,000	\$2,620,000
Total	\$90,000	\$4,890,000	\$29,600,000

Table 14. Economic Value of Commercial/Industrial Property at Risk⁴

	2030		2060		2100	
	Value	Pct.	Value	Pct.	Value	Pct.
Commercial Condominium	-	-	-	-	\$90,000	0.3%
Major Shopping Center	-	-	\$3,130,000	64.0%	\$5,720,000	19.3%
Retail	\$30,000	33.3%	\$310,000	6.3%	\$3,430,000	11.6%
Shopping Center	-	-	\$360,000	7.4%	\$3,560,000	12.0%
Small Office	\$60,000	66.7%	\$1,090,000	22.3%	\$1,220,000	4.1%
Major Manufacture	-	-	-	-	\$15,440,000	52.2%
Mini Warehouse	-	-	-	-	\$140,000	0.5%
Total	\$90,000	100%	\$4,890,000	100%	\$29,600,000	100%



Oxnard Municipal Properties

By 2030

- ▶ Mostly parcels that are entitled for residential development are susceptible to erosion.
- ▶ Impacts estimated at \$5 million.

By 2060

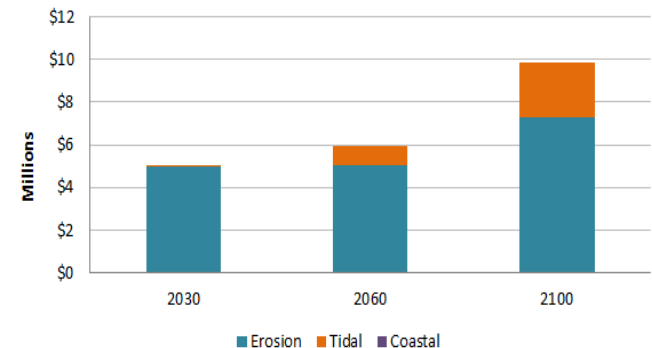
- ▶ More undeveloped properties become susceptible to erosion.
- ▶ Impacts increase by less than \$1 million.

By 2100

- ▶ Properties become susceptible to erosion and tide inundation.
- ▶ Impacts increase to almost \$10 million.

- ▶ City-owned properties in the hazard zone are undeveloped, no assessed values.
- ▶ Undeveloped properties were valued at the cost of conservation easements (\$0.30 per sq. ft.) based on recent sales data in California.
- ▶ A few of the parcels are entitled for residential development. Valued at the average for other residential property at risk, \$125 per sq. ft.

Figure VII-20. Economic Value of Undeveloped and City-Owned Property at Risk



	2030	2060	2100
Erosion	\$4,990,000	\$5,070,000	\$7,290,000
Tidal	\$80,000	\$840,000	\$2,560,000
Coastal	\$0	\$0	\$0
Total	\$5,070,000	\$5,910,000	\$9,850,000



Hazardous Waste

- ▶ Halaco - EPA Superfund site.

By 2030

- ▶ Eastern portion of Halaco impacted by coastal storm flooding.

By 2060

- ▶ Vulnerability to coastal storm flooding increases.

By 2100

- ▶ Vulnerable to coastal storm flooding and rising tide inundation.



Vulnerability Summary

- ▶ Erosion biggest threat to all sectors
 - ▶ Except
 - ▶ Commercial land and Channel Island Harbor -Tidal Inundation.
 - ▶ Halaco Superfund Site – Coastal Storm Flooding.
- ▶ No large damage to commercial and municipal properties due to coastal hazards.
- ▶ Coastal hazards are projected to impact 415 acres of publicly-accessible beach at McGrath State Beach and Oxnard Shores.
- ▶ Residential Land losses are estimated to total more than \$300 million by 2030 due to erosion.

Questions/Comments



IV. Possible Adaptation Strategies

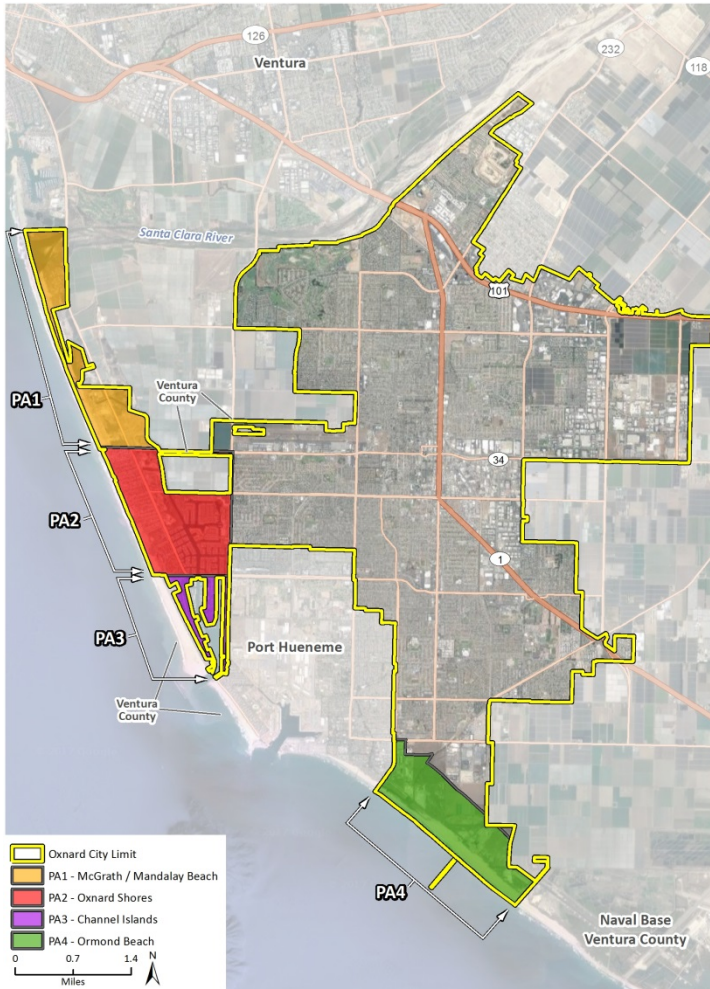


Policies lead to projects

LCP Policy 39: All applications for grading and building permits and subdivisions shall be reviewed for threats from hazards such as seismic activity, liquefaction, tsunami run-up, seiche, beach erosion, flood, storm wave run-up, and expansive soils. Geologic reports may be required in known hazard areas. **Appropriate mitigation measures shall be applied to minimize threat from any hazards.**

LCP Policy 40: If new development is located within **the 100-year flood and storm wave run-up** area as designated by the Department of Housing and Urban Development and on the land use map, it shall be **designed and engineered to withstand the effects of the flooding and wave run-up without the use of seaways or other protective structures.** Particular care shall be given in protecting the necessary gas, electrical, sewer and water connections from breaking in the event of heavy wave run-up. Any person developing property within the 100-year flood line shall agree to indemnify and hold the City harmless from any liability or damages resulting from the construction of his development

Organization by Planning Area



- ▶ PA 1 – McGrath-Mandalay
- ▶ PA 2 – Oxnard Shores
- ▶ PA 3 – Channel Islands Harbor
- ▶ PA 4 – Ormond Beach

Each Planning Area has geography and land uses that requires a different mix of adaptations.

Adaptations need to ‘work’ together, and coordinate with State, County, Port Hueneme, Harbor District, and U.S. Navy.

What are SLR/LCP Adaptation choices ?



DO NOTHING

Let SLR change shoreline, move inland.



GET WET

Short-term strategies such as drainage modifications.



MOVE UP

Raise land and structures, steeper beach.



MOVE BACK

Move inland.



MOVE OUT

Remove completely.



GREEN PROTECT

Dunes and other natural features reduce storm damage potential.



HARD PROTECT

Armoring with rocks, seawalls, groins, dikes, and other hard infrastructure.

Evaluation Criteria

- ▶ Feasibility
- ▶ Cost
- ▶ Trade-offs/Secondary impacts
- ▶ Sea Level Rise Accommodation
- ▶ Community Priorities (e.g. Public Safety, Social Justice)
- ▶ Green versus Gray
- ▶ Regional Consistency
- ▶ Policy Consistency
- ▶ Maladaptation

PA 1 McGrath-Mandalay

Adaptation Strategies



Move Back

- ▶ Relocation of McGrath State Beach facilities to higher ground within the park.



Move Out

- ▶ Remove Mandalay Generating Station after 2020, no replacement power plant.
- ▶ SCE McGrath Peaker removal after 25 year permit expires.

Considerations

- ▶ Oil wells are in County jurisdiction.
- ▶ Eventually, Harbor Blvd and bridge are at risk.



Source: vcstar

PA 2 Oxnard Shores

Adaptation Strategies



Green Protect

- ▶ Create dunes from 5th Street south, obscures 1st floor views. Wide beach gives flexibility for sand management.



Get Wet

- ▶ Modifications of stormwater drainage/pump system.



Move Up

- ▶ Raise structures per FEMA regulations (draft document under review).



Hard Protect

- ▶ Raise seawalls in marina areas.

Slide 35

Considerations

- ▶ Damage risk remains for beachfront homes.
- ▶ Flooding events increase, costs increase for City and property owners.
- ▶ Increasing City storm event management costs.



Source: rich@living805.com

PA 3 Channel Islands Harbor

Adaptation Strategies



Get Wet

- ▶ Modifications of stormwater drainage/pump systems.



Move Up

- ▶ Raise structures per FEMA regulations (draft document under review).
- ▶ Raise land areas.

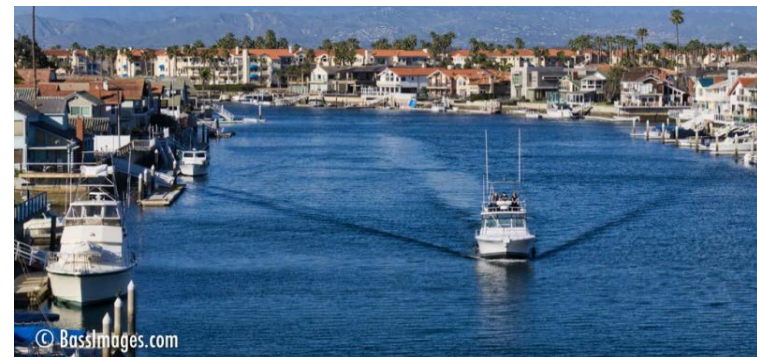


Hard Protect

- ▶ Raise seawalls in harbor.

Considerations

- ▶ Flooding risk remains.
- ▶ Groundwater increasingly higher and brackish.
- ▶ Flooding events increase, costs increase for City and property owners.
- ▶ Increasing storm event management costs.



PA 4 Ormond Beach

Adaptation Strategies



Green Protect

- ▶ Implement OB Restoration and Access Plan.
- ▶ Design wetlands to protect existing industrial development.



Move Out

- ▶ Remove OBGS and Halaco slag pile.
- ▶ Move Water Treatment plant out.

Considerations

- ▶ Flooding risk remains.
- ▶ Groundwater increasingly higher and brackish.
- ▶ Coordination with Port Hueneme and U.S. Navy needed with their adjoining areas.

Approach to Adaptation Analysis



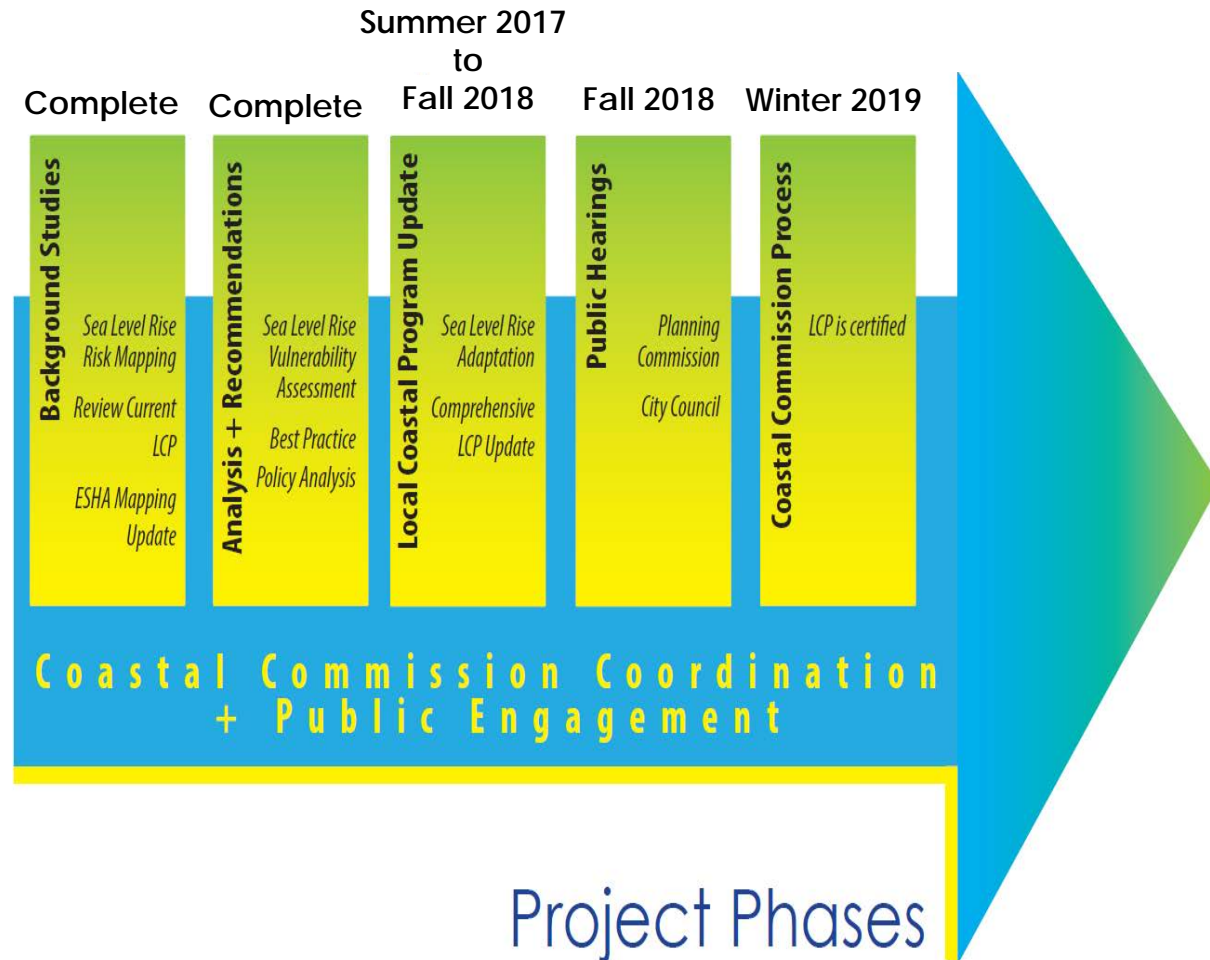
- ▶ Benefits
- ▶ Costs
- ▶ Time Frames
- ▶ Trade-offs

V. Discussion

- ▶ Approach to PA1-McGrath-Mandalay
- ▶ Approach to PA2-Oxnard Shores
- ▶ Approach to PA3-Channel Islands Harbor
- ▶ Approach to PA4-Ormond Beach

VI. Next steps

- ▶ Consolidate all comments.
- ▶ Prepare Adaptation Analysis.
- ▶ Update Coastal Land Use Plan.
- ▶ Submit for Coastal Commission Review.
- ▶ Re-submit for Certification.
- ▶ City Hearings and Adoption.



Thank you for your participation

- ▶ All documents available on Oxnard LCP website.
- ▶ <http://www.oxnardlcpupdate.com/>
- ▶ Any questions or comments email Isidro Figueroa at isidro.figueroa@oxnard.org



Home FAQs Documents Meetings & Dates Participate/Comments



Welcome to Oxnard's Local Coastal Plan Update

The City of Oxnard's Local Coastal Plan (LCP) Update project is a collaborative planning and outreach process that will revise the City's existing LCP to bring it into conformance with Coastal Commission policy directives and approaches to address climate change adaptation strategies, such as those for sea level rise.

City staff and consultants have begun putting together a draft of the LCP document. The City will continue to update this website as additional information becomes available. We need your ideas and input to develop an LCP that's right for Oxnard!



News

The Sea Level Rise Atlas has been completed and is now available for public review.
[SLR Atlas Document](#)

Upcoming Events

Public Workshop
Vulnerability Assessment Report Results and Adaptation Strategies
Wednesday, August 9, 2017
6:00 p.m. - 8:00 p.m.
[Event Notification](#)
[Agenda](#)

Quick Links

[City of Oxnard Website](#)
[Cal Coast Weekly Wave](#)
[Project Documents](#)
[Upcoming Meetings](#)